Appendix F: Glossary of Terms

Above Ground Level (AGL) - Altitude expressed as feet above terrain or airport elevation *(see MSL).*

Advisory Circular (AC) - Federal Aviation Administration Advisory Circular. This is a FAA document, which provides guidance on aviation issues.

Ailerons - An aircraft control surface hinged to the rear, outer section of the wing for banking ("tilting") the aircraft. A bank causes an aircraft to turn. Controlled by right or left movement of the control yoke or stick.

Air Carriers - This includes the commercial system of air transportation and consists of certified route air carriers, air taxis (including commuters) supplemental air carriers, commercial operators of large aircraft, and air travel clubs. Air Carriers are certified under FAA regulations to carry passengers under FAR Part 121, 127, 135, etc.

Aircraft Approach Category - A grouping of aircraft based on 1.3 times their stall speed in the landing configuration at the certificated maximum flap setting and maximum landing weight at standard atmospheric conditions. The categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more but less than 121 knots.
- Category C: Speed 121 knots or more but less than 141 knots.
- Category D: Speed 141 knots or more but less than 166 knots.
- Category E: Speed 166 knots or more.

Airfield Capacity - Airfield capacity is the maximum number of aircraft operations that can be accommodated by an airport's runways and taxiways over a specified time period (e.g. hourly capacity).

Airline Transport Pilot (ATP) - The most advanced of all pilot certificates, requiring the highest skill and experience levels. Required: a minimum of 1,500 hours flight experience, ATP written exam and flight test. Mandatory for captains of *Part 121* major scheduled airlines, regional carriers, *Part 125* scheduled commuter airlines, and some *Part 135* operations. A hiring requirement for many pilot positions in corporate and commercial general aviation flying.

Airplane Design Group (ADG) - A grouping of airplanes based on wingspan. The groups are as follows:

- Group I: Up to but not including 49 feet (15 m).
- Group II: 49 feet (15 m) up to but not including 79 feet (24 m).
- Group III: 79 feet (24 m) up to but not including 118 feet (36 m).
- Group IV: 118 feet (36 m) up to but not including 171 feet (52 m).
- Group V: 171 feet (52 m) up to but not including 214 feet (65 m).
- Group VI: 214 feet (65 m) up to but not including 262 feet (80 m).

Airport Elevation - The highest point on an airport's usable runway expressed in feet above mean sea level (MSL).

Airport Layout Plan (ALP) - The plan of an airport showing the layout of existing and proposed airport facilities.

Airport Reference Point (ARP) - The latitude and longitude of the approximate center of the airport.

Airport Slots – The number of landings or takeoffs allowed for a specified time period. Slots are sometimes used at commercial airports when the hourly demand significantly exceeds hourly capacity. In the United States, the only airports with slot restrictions are Kennedy and LaGuardia in New York, National in Washington, DC, and O'Hare in Chicago.

Airport Traffic Control Tower (ATCT) - A facility providing airport traffic control service to an airport and its associated airspace area.

Air Taxi - A FAR Part 135 certificated air carrier carrying passengers and cargo for hire and operating under exemption authority from the Civil Aeronautics Board; aircraft of 30 seats or less or maximum payloads of 7,500 lbs.

Air Traffic Control (ATC) - The FAA service providing separation services to participating airborne traffic and clearances to land, take off or taxi at airports with a control tower.

Altimeter - A highly sensitive barometer that shows an aircraft's altitude above *mean sea level* by measuring atmospheric pressure.

Altimeter Setting - A value related to local barometric pressure, usually provided to pilots *by ATC.* Used as a reference setting so that the aircraft *altimeter* indicates an accurate altitude. Above 18,000 feet, all pilots use a standard setting of 29.92 inches of mercury.

Annual Service Volume (ASV) - ASV is a reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time.

Approach (Departure) Control - Radar-based *air traffic control*, associated with the control tower at larger airports. Provides traffic separation services from outside the immediate airport area to a distance of about 40 miles.

Approach End of Runway - The approach end of runway is the near end of the runway as viewed from the cockpit of a landing airplane.

ARSA - *(See CLASS C Airspace)*

ATA - *(See CLASS D Airspace)*

Automated Flight Service Station (AFSS) - A (non-air traffic control) *FAA* facility providing pilots with weather briefing and flight-plan filing by radio, telephone and in person. Monitors flight plans for overdue aircraft and initiates search and rescue services. "Automated" refers to telephone call handling equipment and computer information systems aiding pilot briefers.

Automated Surface Observation System (ASOS) - The primary surface weather observing system in the U.S., supporting aviation operations and weather forecasting. Automated sensors record wind direction and speed, visibility, cloud ceiling, precipitation, etc. Data sent automatically to the National Weather Service. At many locations, a computer-generated voice broadcasts the minute-by-minute weather reports to pilots on a discrete radio frequency.

Automated Terminal Information System (ATIS) - A continuous broadcast on a separate *ATC* frequency of an airport's current weather (updated at least hourly). Eliminates controller requirement to read local weather data to each landing or departing aircraft.

Automated Weather Observing System (AWOS) - Provides automated airport weather observations to pilots on a discrete radio frequency via a computer-generated voice. Less sophisticated than *ASOS,* usually installed using state funds.

Auxiliary Flight Service Station (XFSS) - A local-service FSS facility retained where special operational or weather conditions mandated an exception from consolidation. Provides only airport advisories and weather observations. Twenty of the 46 XFSSs are in Alaska.

Available Ton Miles (ATMs) - Tons multiplied by miles flown. It is an international measure of the capacity available for a carrier. It is also used to measure capacity available for freight carriers.

Available Seat Miles (ASM) - The number of seats available multiplied by the number of miles flown. This measures an airline's capacity capability. For example, a transport configured to fly 100 seats that goes 100 miles would give the carrier 10,000 ASMs for that particular flight.

Available Seat Kilometers (ASK) - The number of seats flown multiplied by the number of kilometers they are flown.

Available Ton Kilometers (ATK) - The number of tons capable of being carried, multiplied by the number of kilometers flown.

Average Fare - Passenger revenue divided by the number of passengers.

Base or Base Leg - The leg perpendicular to *the final* leg of the *traffic pattern* to the landing runway.

Based Aircraft - An aircraft permanently stationed at an airport by agreement between the airport owner (management or FBO) and the aircraft owner.

Bilateral Aviation Agreement - An agreement between two countries similar to a treaty, but concerning only aviation rights.

Blast Fence - A barrier used to divert or dissipate jet blast or propeller wash.

Block Hours - The time between when an aircraft departs the gate and its arrival at its destination gate.

Breakeven Load Factor (BELF) - The load factor necessary for the carrier to financially break even. It is a function of the percentage of seats filled at a particular yield vs. the airline's operating costs.

Building Restriction Line (BRL) - A line that identifies suitable building area locations on airports.

Capacity - The maximum number of aircraft operations that can be accommodated by an airport (or airport component) over a specified time period (e.g. hourly capacity). When the demand exceeds capacity, the level of delay rapidly increases.

Capital Costs - Non-recurring or infrequently recurring costs of long-term assets, such as land, guideways, stations, buildings, and vehicles.

Center - One of 24 FAA Air Route Traffic Control Centers providing radar surveillance and traffic separation to participating en route traffic above and outside airspace handled by *Approach and Departure Control.*

Certificated Flight Instructor (CFI) - A pilot holding a Commercial pilot certificate who, after passing two written tests and a practical flight exam, is FAA-rated to give flight instruction. The flight instructor rating is specific as to type of instruction authorized, e.g., single-engine airplane, multi-engine airplane, instrument flying (CFII), helicopter; etc.

Class A Airspace - Airspace between 18,000 and 60,000 feet *MSL* over the conterminous United States. *IFR* clearances are required for all aircraft operating in CLASS A airspace. Formerly called the Positive Control Area.

Class B Airspace - Airspace area around the busiest U.S. hub airports, typically to a radius of 20 *nautical miles* and up to 10,000 feet above ground level. Operations within CLASS B airspace require an ATC clearance and at least a Private pilot certificate (local waivers available), radio communication, and an altitude-reporting (Mode C) *transponder.* Formerly called TCA.

Class C Airspace - Airspace area around busy U.S. airports (other than CLASS B). Radio contact with approach control is mandatory for all traffic. Typically includes an area from the surface to 1,200 feet *AGL* out to 5 miles and from 1,200 to 4,000 feet AGL to 10 miles from the airport. Formerly called Airport Radar Service Area (ARSA).

Class D Airspace - Airspace around an airport with an operating control tower; typically to a radius of 5 miles from the surface to 2,500 feet AGL. Radio contact with the control tower required prior to entry. Formerly called Airport Traffic Area (ATA).

Class E Airspace - General *controlled airspace* comprising control areas, transition areas, Victor airways, the Continental Control Area, etc.

Class F Airspace - International airspace designation not used in the U.S.

Class G Airspace - Uncontrolled airspace, generally the airspace from the surface up to 700 or 1,200 feet AGL in most of the U.S., but up to as high as 14,500 feet in some remote Western and sparsely populated areas.

Clear Zone - See Runway Protection Zone.

Clearance - Formal instructions from air traffic control authorizing a specific route or action (climb or descend, entry into *controlled airspace).* Pilots may deviate from an ATC clearance in an emergency or when compliance would threaten safety of flight.

Clearway (CWY) - A defined rectangular area beyond the end of a runway cleared or suitable for use in lieu of runway to satisfy takeoff distance requirements.

Code-Sharing - A growing practice in which airlines share the same two-letter designator code on certain flights, as they are presented in the various computer reservations systems used by airlines and travel agents. Sharing of the codes permits a travel agent or airline to sell a ticket that will include routings of both carriers where codes are shared.

Commercial Pilot - Holder of an FAA Commercial pilot certificate, requiring a minimum of 250 flight hours (and other sub-requirements), a Commercial written test and Commercial flight test. The pilot certificate to fly for compensation or hire, often in a wide variety of commercial general aviation operations including sightseeing, aerial application, glider towing and flight instruction. It does not necessarily imply flying for a scheduled airline. (See *ATP*. FYI: More than 40% of general aviation pilots are licensed as Commercial or ATP pilots, whether they fly for a living or not.)

Commercial Service Airport - A public airport, which enplanes 2,500 or more passengers annually and receives scheduled commercial passenger service. See "AIR CARRIER" for more information.

Common Traffic Advisory Frequency (CTAF) - The radio frequency, also called the *UNICOM* frequency, used by all traffic at an airport without an operating control tower to coordinate approaches and landings, takeoffs and departures. Pilots announce their positions, intentions and actions in the *traffic pattern* for the benefit of other traffic.

Commuter Airlines - Scheduled commuter air carrier operating with passengers, cargo, or mail for revenue in accordance with FAR Part 135 or Part 121.

Compass Calibration Pad - An airport facility used for calibrating an aircraft compass.

Computer Reservations Systems - The electronic system that allows travel agents or airlines to reserve seats on commercial flights.

Congestion - The volume of traffic at which a road, airport, or other transportation facility is no longer operating at an acceptable level of service.

Controlled Airspace - A generic term including all airspace classes in which *ATC* services are available. Does not imply that all flight is under ATC control. *VFR* aircraft may operate without ATC contact in most controlled airspace as long as weather conditions will permit them to see and avoid other aircraft.

Cost per Available Seat Mile (CASM) - The unit operating cost of a carrier, also known as unit cost. The cost expressed in cents to operate each seat mile offered. Determined by dividing operating costs by ASMs.

Declared Distances - The distances the airport owner declares available for the airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- *Takeoff run available (TORA)* - the runway length declared available and suitable for the ground run of an airplane taking off;
- *Takeoff distance available (TODA)* - the TORA plus the length of any remaining runway or clearway (CWY) beyond the far end of the TORA;
- *Accelerate-stop distance available (ASDA)* - the runway plus stopway (SWY) length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff; and
- *Landing distance available (LDA)* - the runway length declared available and suitable for a landing airplane.

NOTE: The full length of TODA may not be usable for all takeoffs because of obstacles in the departure area. The usable TODA length is aircraft performance dependent and, as such, must be determined by the aircraft operator before each takeoff and requires knowledge of the location of each controlling obstacle in the departure area.

Delay – The difference between constrained and unconstrained operating time for an aircraft.

Demand Management - a method of controlling airport access by promoting more effective or economically efficient use of existing facilities. The two most prevalent methods are differential pricing and auctioning of landing rights.

Design Aircraft - The Design Aircraft is an aircraft whose dimensions and/or other requirements make it the most demanding aircraft for an airport's facilities (i.e. runways and taxiways), and is used as the basis for airport planning and design. Note that if the airport's facilities are designed to accommodate the Design Aircraft, they can accommodate less demanding aircraft as well. An aircraft can be utilized as the Design Aircraft for an airport if it has or is expected to conduct 500 or more annual operations (250 landings) at that airport.

Disposable Personal Income - personal income less personal tax and non-tax payments. It is the income available to persons for spending or saving.

Downwind - The standard *traffic pattern* leg where traffic flies parallel to the landing runway in the direction opposite that of landing. Airplanes usually land into the wind. In this leg of the pattern, the aircraft has the wind behind it, thus the plane is flying "downwind."

DUATS (Direct User Access System) - Permits pilots with a personal computer to obtain preflight weather data and *flight plans.* Toll-free service is available to all pilots with a current *medical certificate.*

Elevator - An aircraft control surface hinged to the rear of the left and right horizontal stabilizer of the aircraft tail. Changes the aircraft pitch attitude nose-up or nose-down, as during climb or descent. Controlled by pushing or pulling on control yoke or stick.

ELT (Emergency Locator Transmitter) - A radio transmitter activated automatically by the impact of an accident. Emits a warbling tone on the international emergency frequencies of 121.5 MHz, 243 MHz and (newer models) 406 MHz. ELT signals can be received by nearby FAA facilities, aircraft overhead, and search and rescue (SARSAT) satellites.

Enhancement Projects - Various scenic, historic and environmental activities eligible for project funding under the Surface Transportation Program (STP) element of Federal Transportation funding resources.

Federal Aviation Administration (FAA) - The Department of Transportation's agency for aviation. In addition to regulating airports, aircraft manufacturing and parts certification, aircraft operation and pilot certification ("licensing"), the FAA operates *Air Traffic Control*, purchases and maintains navigation equipment, certifies airports and aids airport development, among other activities.

Federal Aviation Regulation (FAR) - Regulations developed by the FAA in order to maintain safety, define standards, and institute uniform practices throughout the industry.

Federal Highway Administration (FHWA) - Division of the U.S. Department of Transportation that administers the funds for highway planning and capital programs.

Federal Transit Administration (FTA) - Division of the U.S. Department of Transportation that administers the funds for transit planning and capital/operating programs.

Final - The last leg of the *traffic pattern* when the aircraft is aligned to fly straight in to the landing runway.

Financing (or Dry) Lease - Lease in which the service provided by the lessor to the lessee is limited to financial equipment. All other responsibilities related to the possession of equipment, such as maintenance, insurance, and taxes, are borne by the lessee. A financial lease is usually non-cancelable, and is fully paid out (amortized) over its term.

Fixed Base Operation or Fixed Base Operator (FBO) - A sales and/or service facility located at an airport, or the person who operates such a facility. An airport-based business that parks, services, fuels and may repair aircraft; often rents aircraft and provides flight training. The term was coined to differentiate FBOs from businesses or individuals without an established place of business on the airport.

Fixed By Function NAVAID - An air navigation aid (NAVAID) that must be positioned in a particular location in order to provide an essential benefit for civil aviation is fixed by function. Exceptions are:

- Equipment shelters, junction boxes, transformers, and other appurtenances that support a fixed by function NAVAID are not fixed by function unless operational requirements require them to be located in close proximity to the NAVAID.
- Some NAVAIDs, such as localizers, can provide beneficial performance even when they are not located at their optimal location. These NAVAIDS are not fixed by function.

Flaps - Hinged surfaces on the inboard rear of wings, deployed to increase wing curvature (and thus, lift), primarily used to control angle of descent and to decrease landing touchdown speeds.

Flight Following - *ATC* radar surveillance of *VFR* flights at pilot request over water or desolate areas. Facilitates search and rescue should it be needed. Service provided only if controller is not too busy with *IFR* traffic.

Flight Plan - Filed by radio, telephone, computer, or in person with *Flight Service Stations*, a record of aircraft number; type and equipment, estimated time of departure and time en route, route and altitude to be flown, amount of fuel and number of persons aboard, home base and contact phone number; and other information.

Flight Plan (IFR) - Mandatory filing (at least one-half hour) before a flight under Instrument Flight Rules. Based on flight plan information, ATC can issue (immediately before departure) an IFR clearance to enter clouds or low visibility conditions for instrument rather than visual flight.

Flight Plan (VFR) - Voluntary filing for cross-country flights under Visual Flight Rules. Its function is for search and rescue use only, and has no air traffic control role.

Flight Service Station (FSS) - FAA weather briefing and flight plan facility which once numbered 361 U.S. locations before most were consolidated into 61 AFSS. It is usually on an airport to handle walk-in traffic. Some still provide AAS (Airport Advisory Services) to local air traffic where volume cannot justify a control tower.

Flight Watch or EFAS - *FSS* priority handling of real-time weather information to airborne flights (rather than for preflight planning) on a single national radio frequency of 122.0 MHz (low altitude).

Fractional Ownership – An aircraft ownership concept whereby multiple companies can partially own an aircraft. A common aircraft management company is used to maintain the aircraft and administer the leasing of the aircraft among the owners. The aircraft owners participating in the program agree not only to share their aircraft with others having an ownership interest in that aircraft, but also to lease their aircraft to other owners in the program.

Frangible NAVAID - A navigational aid (NAVAID) that retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft. The term NAVAID includes electrical and visual air navigational aids, lights, signs, and associated supporting equipment.

Free Flow - Roadway conditions in which vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.

Functional Classification - The grouping of streets and highways into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that roads do not function independently, but rather as a system-wide network of roads.

Fuselage - The main body of the aircraft.

General Aviation (GA) - All civil aircraft and aviation activity except that of the certified air carriers and military operations. GA includes corporate flying and private flying (recreation or personal). The 92% of U.S. aircraft and more than 65% of U.S. flight hours flown by other than major and regional airlines or the military. Often misunderstood as only small, propeller-driven aircraft. Even a large jet or cargo plane operated under FAR *Part 91* can be a general aviation aircraft.

GPS (Global Positioning System) - Satellite-based navigation system operated by Department of Defense, providing extremely accurate position, time, and speed information to civilian and military users. Based on a "constellation" of 24 satellites, GPS will replace ground-based navigation systems *(VOR, ILS)* as the primary worldwide air navigation system in the 21st Century.

Gross Domestic Product (GDP) - the featured measure of U.S. output, is the market value of the goods and services *produced by labor and property located in the United States*. Because the labor and property are located in the United States, the suppliers (that is, the workers and, for property, the owners) may be either U.S. residents or residents of the rest of the world.

Gross National Product (GNP) - the market value of the goods and services *produced by labor and property supplied by U.S. residents*. Because the labor and property are supplied by U.S. residents, they may be located either in the United States or abroad. The difference between GDP and GNP is net receipts of income from the rest of the world.

Hazard to Air Navigation - An object that, as a result of an aeronautical study, the FAA determines will have a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, operation of air navigation facilities, or existing or potential airport capacity.

High Occupancy Vehicles (HOV) - Vehicles carrying a specified minimum number of persons, usually three or more. Freeways may have lanes designated for HOV use by car-poolers, vanpools and buses.

ILS (Instrument Landing System) - A precision instrument approach system utilizing radio transmitters at the runway ends which provide precise descent and course guidance to the runway permitting aircraft to land during periods of low ceilings or poor visibility.

Instrument Flight Rules (IFR) - Aircraft operation rules as pre-scribed by Federal Aviation Regulations for flying by instruments. Rules of the road for flights permitted to penetrate clouds and low visibility conditions by reference to cockpit

flight instruments and radio navigation. Aircraft must be equipped and pilots qualified and current for IFR flight. Flight plans and ATC clearances are required. Flights are monitored and traffic separated by Air Traffic Control, usually by radar.

Integrated Noise Model (INM) – A computer program typically used for FAR Part 150 noise compatibility planning and for FAA Order 1050 environmental assessment and environmental impact statements.

Intelligent Transportation Systems (ITS) - Electronic, computer and communications technology applied to surface transportation to increase safety, reduce congestion, enhance mobility, minimize environmental impact, increase energy efficiency and promote economic productivity for a healthier economy.

Intermodal - A transportation system connecting or including different modes of transportation.

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) - The most recent legislation passed by the U.S. Congress that authorizes Federal funding through 1997 for highway and transit purposes. The Act reinforces MPO responsibilities and provides more flexibility in transportation planning and programming decision-making.

Itinerant Operations - All aircraft operations other than local operations.

KNOT (nautical mile per hour) - Most common measure of aircraft speed. 100 knots equals 115 statute miles per hour. (For mph, multiply knots by 1.15.)

LAAS - Local Area Augmentation System, an enhancement of the Global Positioning System (GPS) providing greater navigation accuracy and system integrity.

Land Use - The manner in which land or the structures on land are used (i.e., commercial, residential, industrial, etc.).

Large Airplane - An airplane of more than 12,500 pounds (5 700 kg) maximum certificated takeoff weight.

Leases - Contracts granting use of equipment (aircraft) for a specified time in exchange for payment, usually in the form of rent. The owner of the leased property is called the lessor, the user the lessee.

Lease Purchase Agreement - Agreement providing that portions of lease payment may be applied toward the purchase of the property under lease.

Length of Hop - The average distance of a flight or stage length.

Level of Service (LOS) - The quality of flow in the moving stream of people or vehicles. Typically, ranges from LOS A (free flow traffic) to LOS F (stop-and-go unacceptable conditions).

Load Factor (LF) - The percentage of seats filled. Determined by dividing RPMs by ASMs as a percentage (%).

Local Operation - Operations performed by an aircraft that:

- Operates within the local traffic pattern or within sight of the airport,
- Are known to be departing for or arriving from an Airport within a 20-mile radius of the Airport in question, or
- Execute practice maneuvers such as touch and goes or simulated instrument approaches at the airport.

The majority of local operations are conducted by based aircraft.

Long Range Transportation Plan - A 15 to 20 year forecast plan that must consider a wide range of social, environmental, energy and economic factors. The plan addresses overall regional goals and how transportation can best meet those goals within financial limits.

Medical, Third Class - Upon examination by an FAA-designated Aviation Medical Examiner (AME) for general health, eyesight and hearing, a Third Class Medical allows the pilot to exercise the privileges of a *Recreational* or *Private* pilot certificate. Not for flight "for compensation or hire." It is valid for three years (pilots younger than 40) or two years (age 40+).

Medical, Second Class - Allows pilot to exercise the privileges of a *Commercial* pilot certificate "for compensation or hire" for one year then, if not renewed, reverts to Third Class medical.

Medical, First Class - Allows pilot to exercise the privileges of the Airline Transport Pilot *(ATP)* certificate for six months. If not renewed, reverts to a Second Class medical, then to a Third Class medical.

Metropolitan Planning Area - The region in which the MPO carries out its transportation planning responsibilities and is designated as such by the MPO and the Governor in accordance with ISTEA regulations.

Metropolitan Planning Organization (MPO) - The agency designated by the Governor to administer the federally required transportation decision-making process in urbanized areas with over 50,000 in population.

MOA (Military Operations Area) - Airspace, depicted on navigational charts, in which military flight operations (training and practice combat) are conducted. May be transited by *VFR* civilian traffic, but special vigilance is recommended. (See also *Restricted Area*)

Mode - A particular form of travel, for example, walking or traveling by automobile, transit or bicycle.

Mode A - The operating mode of onboard radar *transponders* that transmits a return radio signal to enhance an aircraft's radar return and identify it with one of 4,096 controller-assigned numerical codes.

Mode C - The *transponder* operating mode that also reports aircraft altitude by transmitting data from an encoding *altimeter*

Mode Split - The process by which the number of trips that will be made by two or more modes of transportation is surveyed or estimated.

Movement Area - The runways, taxiways, and other areas of an airport that are used for taxiing, takeoff, and landing of aircraft, excluding loading ramps and parking areas.

MSL (Mean Sea Level) - Altitude expressed as feet above sea level, rather than above local terrain *(AGL).* To ignore varying terrain elevations, all navigational altitudes and barometric altimeters are based on height above mean sea level. Only radar altimeters, which measure the distance between the aircraft and the ground at low altitudes, indicate actual height above the ground.

Multilateral Aviation Agreement - an agreement for air service among more than two nations (see "Freedoms of the Air").

National Airspace System (NAS) - The common system of air navigation and air traffic control encompassing communications facilities, air navigation facilities, airways, controlled airspace special use airspace, and flight procedures authorized by FAR's for domestic and international aviation.

National Highway System (NHS) - A 155,000-mile system of roads, authorized through ISTEA. Comprised of Interstate highways and roads designated as most important to interstate travel, national defense, intermodal connections, and international crossings. Congressional approval of the NHS system was formalized by the National Highway System Act of 1995.

National Transportation Safety Board (NTSB) - The independent federal agency charged with investigating and finding "probable cause" of transportation accidents.

Nautical Mile (NM) - The unit measure of distance in both nautical and aeronautical context. A nautical mile equals 1.15 statute miles (6,080 feet). The measure of speed in regards to nautical miles is known as KNOTS (nautical miles per hour).

Network Airline - An airline that operates a hub-and-spoke system.

NMAC (Near Mid-Air Collision) - Defined by FAA as a potential collision situation between aircraft within 500 feet of each other.

N-NUMBERS - Federal Government aircraft registration numbers. U.S.-registered aircraft numbers begin with "N," Canadian numbers with "C" or "CF," German numbers with "D," United Kingdom numbers with "G," French numbers with "F", Japanese numbers with "JA," etc.

Non-Attainment Area - Any geographic region that has been designated as non-attainment due to transportation related pollutant(s) that violates the national ambient air quality standard. The Clean Air Act requires that these areas perform air quality analyses and determinations to ensure conformity.

Non Towered Airport - An airport without a control tower - the majority of America's 13,000 airports. Only 680 airports have control towers. Non-towered airports are far from being "uncontrolled." Pilots follow *traffic pattern* procedures and self-announce positions and intentions using the *Common Traffic Advisory Frequency (CTAF),* usually called the *UNICOM* frequency.

Notice to Airmen (NOTAM) - A notice identified either as a NOTAM or an Airmen Advisory containing information concerning the establishment, condition, or change in any component of, or hazard in, the National Airspace System, the timely knowledge of which is essential to personnel concerned with flight operations.

Object - Includes, but is not limited to above ground structures, NAVAIDs, people, equipment, vehicles, natural growth, terrain, and parked aircraft.

Object Free Area (OFA) - An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

Obstacle Free Zone (OFZ) - The OFZ is the airspace below 150 feet (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway, and for missed approaches. The OFZ is sub-divided as follows:

- *Runway OFZ*. The airspace above a surface centered on the runway centerline.
- *Inner-approach OFZ.* The airspace above a surface centered on the extended runway centerline. It applies to runways with an approach lighting system.
- *Inner-transitional OFZ*. The airspace above the surfaces located on the outer edges of the runway OFZ and the inner-approach OFZ. It applies to runways with approach visibility minimums lower than 3/4-statute mile (1 200 m).

Obstruction to Air Navigation - An object of greater height than any of the heights or surfaces presented in Subpart C of Code of Federal Regulation (14 CFR), Part 77. (Obstructions to air navigation are presumed to be hazards to air navigation until an FAA study has determined otherwise.)

Operating Lease - Type of lease, normally involving equipment, whereby the contract is written for considerably less than the life of the equipment, and the lessor handles all maintenance and servicing; also called service lease. Most operating leases are cancelable, meaning the lessee can return the equipment if it becomes obsolete, or is no longer needed.

Operation - A take-off, landing or touch-an-go of an aircraft. FAA ATCT operations include all radio contacts with an aircraft, regardless of whether or not they are taking off or landing. Operations used for planning purposes include only takeoffs, landings and touch and goes (which count as 2 operations).

Origination/Destination (O&D) - A measure of the point of origination of a passenger to the final destination. It is the true trip of the passenger, although the passenger may change flights and planes at least once during the journey. It allows carriers to determine where their true business lies.

PART 91, 121, 125, 135 - The parts of Federal Aviation Regulations (*FARs*) covering non-commercial operations (Part 91), major scheduled air carriers (*Part 121*), commuters (*Part 125*), non-scheduled carriers and air taxis (*Part 135*).

PART 61, 141, 142 - The parts of *FARs* covering pilot certification and flight school operations: the pilot certification and standard flight school (Part 61), the integrated curriculum type school (Part 141) requiring slightly fewer flying hours, and a new Part 142 program allowing replacement of more flight time with advanced flight simulators.

Passenger Haul (PAX length of haul) - The average distance flown per passenger. It includes the total distance traveled from connecting flights. Measured in terms of miles.

Peak - The period during which the maximum amount of travel occurs. It may be specified as the morning (a.m.) or evening (p.m.) peak.

Person Trip - A trip made by a person from a single origin to a single destination.

Personal Consumption Expenditures (PCE) - goods and services purchased by U.S. residents. PCE consists mainly of purchases of new goods and of services by individuals from private business.

Personal Income - the income received by persons from all sources—that is, from participation in production, from both government and business transfer payments, and from government interest (which is treated like a transfer payment).

Pilot Weather Report (PIREP) - Voluntary pilot observation of inflight weather conditions radioed to *ATC* or *FSS.* Information used by other pilots to avoid adverse weather and by National Weather Service to amend or update forecasts.

Positive Control Area - (See *CLASS A Airspace*)

Private Pilot - The Private pilot certificate allows flying passengers for personal transportation and business. Requires the pilot to be at least 17 years old, have a minimum of 40 hours of flight experience and training (35 hours under *Part 141*), and pass at least a *Third Class Medical* exam, a written exam and flight test. May not "fly for hire or compensation" but may share expenses equally with passengers.

Precision Approach Category I (CAT I) Runway - A runway with an instrument approach procedure which provides for approaches to a decision height (DH) of not less than 200 feet (60 m) and visibility of not less than 1/2 mile (800 m) or Runway Visual Range (RVR) 2400 (RVR 1800 with operative touchdown zone and runway centerline lights).

Precision Approach Category II (CAT II) Runway - A runway with an instrument approach procedure which provides for approaches to a minima less than CAT I to as low as a decision height (DH) of not less than 100 feet (30 m) and RVR of not less than RVR 1200.

Precision Approach Category III (CAT III) Runway - A runway with an instrument approach procedure that provides for approaches to minima less than CAT II.

Prohibited Area - An airspace area where flight is prohibited except by prior arrangement with the controlling agency. An example is the P-56 area over downtown Washington, D.C., prohibiting flight over the White House.

Pure Freighter Aircraft - An aircraft that is designed to carry freight. This type of aircraft can transport larger and oddly shaped items that cannot fit into the cargo area of a passenger aircraft.

Recreational Pilot - A pilot certificate requiring less training than a Private certificate. Privileges limited accordingly to flight within 50 nautical miles of base, carrying no more than one passenger; using non-tower airports and flying during daylight hours only unless restrictions are removed through further training. May not share expenses. Few new pilots currently choose the recreational certificate.

Regional Airline - Commuter airline that typically operates in a specific region. Most regional airline traffic feeds network carriers.

Regional Jets (RJs) – A new generation of commercial jets with fewer than 100 seats. On many routes, RJs are replacing turboprop aircraft, which have been unpopular with many passengers. Some large carriers have scope clause agreements with their pilots' unions that limit the number of RJs that can be used by the commuter feed carriers that operate them in conjunction with the large airline.

Restricted Area - Airspace that (when "Active" or "Hot") usually excludes civilian aircraft. Examples: airspace for rocket flights, practice air-to-air combat or ground-based artillery practice. Temporary restricted areas are established for events such as

forest fires, natural disasters or major news stories. Flight through a restricted area may be authorized by the "controlling agency" or by *FAA*.

Revenue per Available Seat Mile (RASM) - The revenue generated for each available seat mile operated, expressed in cents. Revenue divided by ASMs.

Revenue Passenger Miles (RPM) - The principal measure of the airline passenger business. It represents the number of paying passengers flown by the distance flown.

Revenue Passenger Kilometers (RPK) - The number of passengers multiplied by the number of kilometers they fly.

Revenue Ton Kilometers (RTK) - The number of tons carried multiplied by the number of kilometers flown.

Revenue Ton Miles (RTMs) - The revenue generated for each ton-mile operated.

Reliever Airport - An airport designated as having the primary function of relieving congestion at a commercial airport and providing more general aviation access to the overall community. Reliever Airports are allowed to receive AIP (federal) funds for improvement.

Right-of-Way (ROW) - Land corridors needed for the construction of highways, transit facilities, railroads, etc.

Rudder - Aircraft control surface attached to the rear of the vertical stabilizer (fin) of the aircraft tail. Forces the tail left or right, correspondingly "yawing" the aircraft right or left. Rudder movement "coordinates" with the banking of wings to balance a turn. Controlled by left and right rudder (foot) pedals.

Runway (RW) - A defined rectangular surface on an airport prepared or suitable for the landing or takeoff of airplanes.

Runway Blast Pad - A surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash.

Runway Protection Zone (RPZ) - An area off the runway end to enhance the protection of people and property on the ground.

Runway Safety Area (RSA) - A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Sale and Leaseback - Form of lease arrangement in which a company sells an asset to another party - usually an insurance or finance company, a leasing company, a limited partnership, or an institutional investor - in exchange for cash, then contracts to lease the asset for a specified term. Such arrangements frequently have tax benefits for the lessee. A company generally opts for the sale and leaseback arrangement as an alternative to straight financing, when the rate it would need to pay a lender is higher than the cost of rental, or when it wishes to show less debt on its balance sheet.

See-and-Avoid -The *FAA* requirement that all pilots are ultimately responsible for separation from other aircraft when visual conditions permit spotting traffic. Even *IFR* flights when operating in visual weather conditions or *VFR* flights being issued radar advisories are responsible for visual scanning to see-and-avoid other traffic.

Separation - Spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off.

Scope Clause - Provisions in US major airlines' pilot contracts that impose limits on the operation of jet airplanes used by regional "partner" airlines. Limits on seat count (generally 70 seats or less), weight, cruise speed, or ratio of regional jets to standard jets, are the most common provisions.

Shoulder - An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection.

Slip - An aircraft control technique with wings banked one way and rudder deployed for the opposite turn. Aircraft flies slightly sideways, increasing drag to make it descend faster without increasing forward speed. Also one of two control configurations used for crosswind landings when the rudder must counteract the turning effect of banking into a crosswind to neutralize the wind's effect.

Small Airplane - An airplane of 12,500 pounds (5 700 kg) or less maximum certificated takeoff weight.

Solo - After typically 12-20 hours of initial flight training, qualified student pilots are permitted to undertake some flights to build experience and confidence without a flight instructor on board. Requires the written endorsement of the student's flight instructor and a *Third Class Medical* certificate. First solo, a major event for any pilot, is traditionally three takeoffs and landings at the student's home airport.

Special Use Airspace (SUA) - All airspace in which restrictions or prohibitions to flight are imposed for military or government needs (See *MOA*, *Restricted Area, Prohibited Area*).

Spin - An aerodynamic condition in which the wings have lost lift and the aircraft follows a descending corkscrew flight pattern in autorotation. Aircraft must be stalled for a spin to occur; this is usually the result of "crossed" flight controls (uncoordinated rudder) causing residual lift on one wing during the stall.

Squawk - (NOUN) The radio transmission of the radar *transponder* onboard an aircraft. (VERB) The *ATC* instruction to the pilot to set one of 4,096 possible codes to identify the aircraft on controller radar. All *VFR* flights squawk code 1200 except when receiving radar advisories or when instructed otherwise by ATC.

Stage Length (see length of hop) - The average distance flown per flight.

Stall - Purely an aerodynamic condition - nothing to do with engine operation. Occurs when lift-producing airflow over the wings is disrupted or lost because angle of wings to airflow (angle of attack) is too high. Most commonly occurs when a pilot doesn't maintain sufficient airspeed in a climb or turn. Student pilots are trained in stall prevention, recognition and recovery.

Statute Mile - A mile measuring 5,280 feet (in contrast to a nautical mile of 6,080 feet).

Stopway (SWY) - A defined rectangular surface beyond the end of a runway prepared or suitable for use in lieu of runway to support an airplane, without causing structural damage to the airplane, during an aborted takeoff.

Student Pilot - A pilot who is training for a *Private Pilot* certificate, either before or after the first solo. A student must obtain a *Third Class Medical* certificate through an examination by an FAA-designated Aviation Medical Examiner before being allowed to fly solo in a powered aircraft. The medical certificate for a student pilot has a student "license" printed on the back.

Surface Transportation Program (STP) - A capital-funding program legislated by ISTEA for a variety of highway, transit, pedestrian and bicycle projects.

Taxi - To operate an airplane under its own power on the ground, except the movement incident to actual takeoff and landing.

Taxilane (TL) - The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

Taxiway (TW) - A defined path established for the taxiing of aircraft from one part of an airport to another.

Taxiway Safety Area (TSA) - A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TCA (Terminal Control Area) - (See *CLASS B Airspace*.)

TCAD - A proprietary low cost anti-collision system detecting and alerting pilots to nearby transponders but not providing evasive instructions or coordination with other aircraft.

TCAS (Traffic Alert and Collision Avoidance System) - A cockpit system to detect other transponder-equipped aircraft, alert pilots, and command/coordinate evasive action between aircraft.

Terminal Area Capacity - The ability of the terminal area to accept the passengers, cargo, and aircraft that the airfield accommodates. Individual elements within terminal areas must be evaluated to determine overall terminal capacity. Terminal elements included in the analysis are: airline gate positions, airline apron areas, cargo apron areas, general aviation apron areas, airline passenger terminals, general aviation terminals, cargo buildings, automobile parking and aircraft maintenance facilities.

Threshold (TH) - The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

Displaced Threshold - The portion of pavement behind a displaced threshold may be available for takeoffs in both directions and landings from the opposite direction.

Relocated Threshold - The portion of pavement behind a relocated threshold is not available for takeoff or landing. It may be available for taxiing of aircraft.

Touch and Go - A training operation in which a landing approach is made, the aircraft touches-down on the runway, but does not fully reduce speed to turn off the runway. Instead, after the landing, full engine power is applied while still rolling and a takeoff is made, thereby practicing both maneuvers as part of one motion. It counts as two separate aircraft operations.

Track - The flight path of an aircraft over the surface of the earth.

Traffic Analysis Zone (TAZ) - The smallest geographically designated area for analysis of transportation activity.

Traffic Pattern - A standard rectangular flight pattern around the landing runway at an airport. Includes 45-degree or crosswind entry to the rectangle, with downwind, base and final legs as sides of the rectangle. Standard are 90-degree left turns around the rectangle (non-standard right-hand traffic pattern is noted in Airport Facility Directories) with downwind flown at a specified altitude, usually 1,000 or 1,500 feet above the airport elevation. At airports with a control tower, the pattern may be modified or shortcut according to *ATC* instructions. Traffic patterns are followed by aircraft in order to exit the airport area after takeoff in an orderly fashion, and to enter an Airport area and ultimately land, also in an orderly fashion.

Transfer Payments - transfer payments to persons and *transfer payments to the rest of the world (net)*. The latter consists of U.S. Government military and nonmilitary grants in cash and nonmilitary grants in kind to foreign governments and of U.S. Government transfers, mainly retirement benefits, to former residents of the United States.

Transponder - A special onboard 1090 MHz radio transmitter to enhance and code an aircraft's radar return. When interrogated by ground radar, it transmits a return signal which controllers can use to identify and tag the flight on their computerized video display radar screen. Paired with an altitude encoder, "*Mode C*" transponders also transmit the aircraft's altitude. All aircraft flying in *Class B* airspace or higher than 10,000' are required to have *Mode C* transponders.

Transport Airport - A transport airport is an airport designed, constructed, and maintained to specifically serve airplanes in Aircraft Approach Category C and D. Please refer to the definition for Aircraft Approach Category. Airports, which accommodate Category C and D aircraft on a semi regular basis, are not necessarily Transport Airports.

Transport Category Aircraft - Aircraft with a maximum Gross takeoff weight of 12,500 pounds or more.

Transportation Demand Management - Programs and policies to reduce peak demand for transportation and to maximize efficient use of the transportation system. Such strategies may include HOV lanes, ride sharing and vanpooling, and congestion pricing.

Transportation Enhancement Program (TEP) - Federal program which provides capital funds for "non-traditional" transportation projects such as bicycle and pedestrian facilities, historic preservation of transportation facilities, and transportation-related landscaping and scenic beautification.

Transportation Improvement Program (TIP) - A capital investment program prepared by the MPO cooperatively with the State and transit operator that prioritizes transportation projects to be implemented with Federal funds over a five year period.

Transportation Network - A schematic representation of the roadway or transit system via a series of links and nodes in a computer database.

Travel Forecasting - The technical process of estimating the number of future users by mode of a system and their particular travel times and routes.

Trip Assignment - The process of allocating highway and transit trips among the different facilities included in a network.

Trip Distribution - The process of estimating the travel between traffic analysis zones.

Trip Generation - The process of estimating trips that will be produced and/or attracted to a geographic unit based on the population and employment characteristics of that unit.

Trip Length - The average length of journey in terms of miles for a passenger.

TRSA (Terminal Radar Service Area) - Radar service that assists with traffic sequencing in some *Class D* airspace. Pilot participation is voluntary.

Turboprop - An airplane using a turboprop engine, a jet rather than piston engine connected to a propeller. Such aircraft can be single- or multi-engine. Turboprop engines are increasingly used when more horsepower is needed for speed or payload than the 300-400 horsepower available from current light-aircraft piston engines. They typically serve narrow markets, and feed major carrier hubs.

Uncontrolled Airport - *(see Nontowered Airport)*

UNICOM A common, multi-purpose radio frequency used at most *nontowered airports* as the *Common Traffic Advisory Frequency.* AOPA coined the term (derived from the words "universal communications") in the 1950s. UNICOM is also used by a *Fixed*

Base Operator for general administrative uses, including fuel orders, parking instructions, etc. Originally 122.8 MHz universally, now includes 122.7,123.0 and other frequencies.

Unit Cost - The cost per available seat mile (ASM). Obtained by counting total operating costs and dividing it by the ASMs. Expressed in cents.

Unit Revenue - The average revenue generated per available seat mile (passenger revenue/ASMs), expressed in cents.

Urbanized Area - An area with a population of 50,000 or more designated by the U.S. Census Bureau.

Utility Airport - A utility airport is an airport designed, constructed, and maintained to serve smaller (single and twin-engine) airplanes.

Vehicle Miles of Travel (VMT) - The amount of vehicle travel on a designated set of roadways multiplied by the total mileage of those roadways.

VFR Conditions - Basic weather conditions prescribed for flight under Visual Flight Rules; usually implies a ceiling of at least 1000 feet and a forward visibility of three miles or more.

Visibility, Prevailing - The horizontal distance at which targets of known distance are visible over at least half of the horizon. It is normally determined by an observer on or close to the ground viewing buildings or other similar objects during the day and ordinary city lights at night.

Visual Flight Rules (VFR) - "See and be seen" flight rules. Each pilot is responsible for the safe spacing and proper operation of his aircraft. Under VFR, a pilot is not required to file a flight plan or be in constant radar and communication contact with air traffic control. Visual flight rules are determined by weather and require a ceiling of at least 1,000 feet and visibility of at least 3 miles. VFR weather minimums for *controlled airspace* require at least a 1,000-foot ceiling and three miles visibility except for "Special VFR" clearances to operate "clear of clouds." Navigation may be by pilotage (reference to ground landmarks), dead reckoning (courses calculated from map plots), radio navigation, or more commonly, a combination of all three.

VFR, MARGINAL - Weather of less than 3,000-foot ceiling and five miles visibility but above the required "1,000 and three."

Visual Runway - A runway without an existing or planned straight-in instrument approach procedure.

VFR Traffic - Aircraft traffic operated solely in accordance with Visual Flight Rules.

Volume - The number of vehicles that actually pass through a given mile of road; can also be applied to transit or bicycle/pedestrian paths.

VOR (VHF Omnidirectional Range) - Ground- based radio navigation aid. More than 1,000 VORs electronically define Victor Airways and Jet Airways, "highways in the sky." Most IFR and many VFR flights follow airway routes.

WAAS (Wide Area Augmentation System) - An enhancement to the *GPS* system providing greater navigation accuracy and system integrity and permitting GPS to be used for precision instrument approaches to most airports.

Wake Turbulence - Turbulent air condition caused by small, tornado-like horizontal whirlwinds trailing an aircraft's wingtips (wingtip vortices). Wake turbulence associated with larger aircraft flying at slow speeds (as on take-off or landing approach) is the most severe and can cause loss of control for smaller aircraft following close behind. Controllers use defined separation standards to avoid the problem for take-off, landing, approach and departure operations. This turbulence is greatest when the aircraft is taking off and landing.

Wet (or ACMI) Lease - A lease in which not only the aircraft is provided, but also other services are included, as well as hull insurance, crews, and maintenance guarantees.

Wind Coverage - Wind coverage is the percent of time for which aeronautical operations are considered safe due to acceptable crosswind components.

Wind Shear - Large changes in either wind speed or direction at different altitudes that can cause sudden gain or loss of airspeed. Especially hazardous when aircraft airspeeds are low on take-off or landing.

Yield (revenue per revenue passenger mile) - A function of passenger revenue generated, divided by the revenue passenger miles generated. It is expressed in cents per mile, and measures the average level of fares at which the airline is selling its product.

Yield Management - Also known as revenue management, the process airline use to set prices for a flight. The goal is to find the mix of seat prices that produces the most revenue.

Yield Management Systems - Computer-managed systems that airlines have installed and are constantly perfecting, to better enable them to manage price and seat inventories, enabling the carriers to sell the maximum number of seats at the most productive yield mix.